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EUROPEAN PATENT OFFICE
International Preliminary Examination Authority
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Re: International Application PCT/BR 03/00172
Applicant: MULTIBRAS S.A. ELETRODOMÉSTICOS
Title: "HINGE ARRANGEMENT FOR THE FRONT DOOR OF A CABINET"

Dear Sirs,

In response to the Written Opinion issued on November 29, 2004, regarding the above-referenced patent application, we are attaching a new independent claim 1 amended in order to specifically recite that the hinge body incorporates a front portion (20a) and a rear portion (20b), as described in the specification, at page 5, lines 17 to 27, for differentiating the present solution from that of documents US4932729 and EP0825400 cited by the Examiner.

According to our understanding the cited documents represent the prior art solution discussed in the specification and in which the hinge body is provided in different parts each one being affixed to a different part of the cabinet in order to carry a shoe and a hinge pin.

As can be seen from the disclosure (page 5, lines 17 - 27), the hinge arrangement comprises a hinge body (20) which takes the form of a plate (of course a single piece) with a rectangular contour and injected in Zamack and incorporating an upper flange (21) dividing the hinge body portion (20a) and in a rear portion (20b).

The above wording of the disclosure makes clear that the plate form body (20) is a single piece usually injected in Zamack and incorporating a front and a rear portion. There is nothing in the disclosure leading to the shoe (40) and for the hinge body (20), which works as a support structure for the shoe (40) and for the hinge pin (32), can be made of different parts.

AMPA/vk

If we consider the proposed new claim 1 attached herewith, the included wording "a hinge body incorporating a front and a rear portion" cannot be interpreted as defining a body other than one formed by a single piece.

In US'729 a peripheral flange is mounted to the inferior portion of the cabinet, said peripheral flange fixing a two-part hinge body through screws, one of said hinge body part carrying a hinge pin support and the other hinge body part carrying a shoe and a roller. The hinge body part carrying the hinge pin of said construction projects forwardly so as to maintain the vertical hinge pin disposed on a plane that is parallel to and slightly spaced from the front flange of the cabinet, making the whole weight of the door and all the dynamic loads associated with its operational angular displacement to be applied to the front flange of the peripheral flange mounted to the cabinet.

In this prior mounting arrangement, the weight of the door, which generally supports several loads on its internal shelves, as well as its operational angular movement, produce deformations in the front structure of the peripheral flange mounted to the cabinet and in the two part hinge body sufficient to misalign the door in relation to the correct seating position of the sealing gasket on its seat defined by the front flange of the cabinet, as discussed in the specification of the referenced application.

The static and dynamic loads produced by the door are applied to the cabinet in a point of the latter that is forwardly displaced in relation to the cabinet itself and to its front feet seated on the floor. This fact weakens the door support system and leads to the type of misalignment mentioned above, requiring structural reinforcements to be made in the hinge body and in the structure of the peripheral flange mounted to the cabinet so as to avoid excessive deformations and even ruptures in the fixation of the lower hinge to the front flange of the cabinet. Said deformations will affect the other hinge body part carrying the shoe and affixed to the peripheral flange mounted to the cabinet.

Another difference between US'729 and the present solution is that in said prior art construction at least one hinge body part have to be removed from one of the sides of the cabinet and remounted on the other side when it is necessary to revert the opening direction of the door. The reversion of the opening direction of the door requires operations of unscrewing and re-screwing the hinge body in relation to the front flange of the cabinet.

Although EP'400 allows reversibility of the door hinge, it defines a construction, which is different from that of US'729 solution and much more complex than that of the present solution. Also, in said EP'400 construction the hinge body is provided in a peripheral flange affixed to the lower part of the cabinet, which differs from the present Multibrás's solution.

We hereby bring three copies of claim set pages 9 to 11 containing a new claim set amended accordingly. In order to facilitate the observation of the amendments, a further copy of said pages 9 to 11 is being attached where underscores indicate insertions and [bold in brackets] indicate deletions

Respectfully submitted,

Antonio M. P. Arnaud.

10/536678
JC20 Rec'd PCT/PTO 25 MAY 2005

CLAIMS

1. A hinge arrangement for the front door of a cabinet (10) having a lower front edge (11), characterized in that it comprises a hinge body (20) incorporating a front portion (20a) and a rear portion (20b), affixed to the lower front edge (11) of the cabinet (10) and carrying an upwardly projecting hinge pin (30), maintaining a certain spacing from the lower front edge (11) of the cabinet (10) and around which the front door is inferiorly journaled; a shoe (40) inferiorly mounted to the hinge body (20) according to a vertical axis, maintaining said certain spacing from the lower front edge (11) of the cabinet (10), said shoe (40) being selectively manually displaced towards said axis between an inoperative position, in which it is operatively spaced from the floor (P) that supports the cabinet (10), and an operative position, in which it is seated on the floor (P), in order to transfer to the latter the weight of the front door and to lock the cabinet (10) against displacements on the floor (P).
2. The hinge arrangement as set forth in claim 1, characterized in that the hinge pin (30) presents a lower portion (31), to be removably affixed into a corresponding bore (26) provided in the hinge body (20), and an upper portion (32), projecting upwardly in relation to the latter.
3. The hinge arrangement as set forth in claim 2, characterized in that the hinge pin (30) incorporates a median flange (33) to be seated on the hinge body (20) so as to define an axial bearing to support, inferiorly, the front door.
4. The hinge arrangement as set forth in claim 2, characterized in that the shoe (40) is coupled to a shoe pin (41) that is removably affixed into a

corresponding bore (26) provided in the hinge body (20).

5. The hinge arrangement as set forth in claim 4,
characterized in that the hinge pin (30) has its lower
5 portion (31) rotatably locked in the hinge body (20)
when fitted inside the respective bore (26) of the
latter.

10 6. The hinge arrangement as set forth in claim 5,
characterized in that the bore (26) of the hinge body
(20) presents a lower portion (26a) of smaller
diameter, and an upper portion (26b) of larger
diameter and with a non-circular cross section.

15 7. The hinge arrangement as set forth in claim 6,
characterized in that the lower portion (31) of the
hinge pin (30) incorporates an enlargement (34) which
is fitted and locked against rotation inside the upper
portion (26b) of the bore (26) of the hinge body (20),
while the lower portion (31) is fitted with a small
gap inside the lower portion (26a) of the bore (26) of
20 the hinge body (20).

8. The hinge arrangement as set forth in claim 6,
characterized in that the lower portion (26a) of the
bore (26) of the hinge body (20) is threaded along at
least part of its longitudinal extension.

25 9. The hinge arrangement as set forth in claim 8,
characterized in that the shoe pin (41) is provided
with an external thread to be threaded inside the
lower portion (26a) of a respective bore (26) of the
hinge body (20).

30 10. The hinge arrangement as set forth in claim 9,
characterized in that the bores (26) for the fixation
of the hinge pin (30) and the shoe pin (41) are
identical and disposed side by side, with their axes
lying on a plane that is parallel to the lower front
35 edge (11) of the cabinet (10).

11. The hinge arrangement as set forth in claim 1,
characterized in that the hinge body (20) incorporates, medianly, an upper flange (21) disposed between a front portion (20a) and a rear portion (20b)
5 of the hinge body (20), said upper flange (21) and rear portion (20b) being respectively seated and affixed against the lower front edge (11) and under an adjacent lower wall portion (12) of the cabinet (10).
12. The hinge arrangement as set forth in claim 11,
10 characterized in that the upper flange (21) and the rear portion (20b) of the hinge body (20) are provided with bores (22, 24) for the passage of respective front screws (23) and lower screws (25) to be threaded into respective bores (13, 15) provided in the lower
15 front edge (11) and in the lower wall portion (12) of the cabinet (10).
13. The hinge arrangement as set forth in claim 11,
characterized in that the hinge body (20) further carries, inferiorly, a roller (70) for displacing the
20 cabinet (10) on the floor (P).
14. The hinge arrangement as set forth in claim 12,
characterized in that the roller (70) is journaled in a lower projection (28) of the rear extension (20b) of the hinge body (20).
- 25 15. The hinge arrangement as set forth in any one of the claims 1-14, characterized in that it comprises two hinge bodies (20) secured to the lower front edge (11) of the cabinet (10), one of said hinge bodies (20) carrying, inferiorly, a shoe (40) and being
30 affixed close to the end of the lower front edge (11) turned to the opening side of the front door, and the other hinge body (20) carrying, inferiorly, a shoe (40) and, superiorly, a hinge pin (30) and being affixed to the end of the lower front door (11) turned
35 to the hinge side of the front door.

10/536678

JC20 Rec'd PCT/PTO 25 MAY 2005
CLAIMS

1. A hinge arrangement for the front door of a cabinet (10) having a lower front edge (11), characterized in that it comprises a hinge body (20) incorporating a
5 front portion (20a) and a rear portion (20b), affixed to the lower front edge (11) of the cabinet (10) and carrying an upwardly projecting hinge pin (30), maintaining a certain spacing from the lower front edge (11) of the cabinet (10) and around which the
10 front door is inferiorly journaled; a shoe (40) inferiorly mounted to the hinge body (20) according to a vertical axis, maintaining said certain spacing from the lower front edge (11) of the cabinet (10), said shoe (40) being selectively manually displaced towards
15 said axis between an inoperative position, in which it is operatively spaced from the floor (P) that supports the cabinet (10), and an operative position, in which it is seated on the floor (P), in order to transfer to the latter the weight of the front door and to lock
20 the cabinet (10) against displacements on the floor (P).
2. The hinge arrangement as set forth in claim 1, characterized in that the hinge pin (30) presents a lower portion (31), to be removably affixed into a
25 corresponding bore (26) provided in the hinge body (20), and an upper portion (32), projecting upwardly in relation to the latter.
3. The hinge arrangement as set forth in claim 2, characterized in that the hinge pin (30) incorporates
30 a median flange (33) to be seated on the hinge body (20) so as to define an axial bearing to support, inferiorly, the front door.
4. The hinge arrangement as set forth in claim 2, characterized in that the shoe (40) is coupled to a
35 shoe pin (41) that is removably affixed into a

corresponding bore (26) provided in the hinge body (20).

5. The hinge arrangement as set forth in claim 4,
characterized in that the hinge pin (30) has its lower
5 portion (31) rotatably locked in the hinge body (20)
when fitted inside the respective bore (26) of the
latter.

6. The hinge arrangement as set forth in claim 5,
characterized in that the bore (26) of the hinge body
10 (20) presents a lower portion (26a) of smaller
diameter, and an upper portion (26b) of larger
diameter and with a non-circular cross section.

7. The hinge arrangement as set forth in claim 6,
characterized in that the lower portion (31) of the
15 hinge pin (30) incorporates an enlargement (34) which
is fitted and locked against rotation inside the upper
portion (26b) of the bore (26) of the hinge body (20),
while the lower portion (31) is fitted with a small
gap inside the lower portion (26a) of the bore (26) of
20 the hinge body (20).

8. The hinge arrangement as set forth in claim 6,
characterized in that the lower portion (26a) of the
bore (26) of the hinge body (20) is threaded along at
least part of its longitudinal extension.

25 9. The hinge arrangement as set forth in claim 8,
characterized in that the shoe pin (41) is provided
with an external thread to be threaded inside the
lower portion (26a) of a respective bore (26) of the
hinge body (20).

30 10. The hinge arrangement as set forth in claim 9,
characterized in that the bores (26) for the fixation
of the hinge pin (30) and the shoe pin (41) are
identical and disposed side by side, with their axes
lying on a plane that is parallel to the lower front
35 edge (11) of the cabinet (10).

11. The hinge arrangement as set forth in claim 1,
characterized in that the hinge body (20) incorporates, medianly, an upper flange (21) disposed between a front portion (20a) and a rear portion (20b)
5 of the hinge body (20), said upper flange (21) and rear portion (20b) being respectively seated and affixed against the lower front edge (11) and under an adjacent lower wall portion (12) of the cabinet (10).
12. The hinge arrangement as set forth in claim 11,
10 characterized in that the upper flange (21) and the rear portion (20b) of the hinge body (20) are provided with bores (22, 24) for the passage of respective front screws (23) and lower screws (25) to be threaded into respective bores (13, 15) provided in the lower
15 front edge (11) and in the lower wall portion (12) of the cabinet (10).
13. The hinge arrangement as set forth in claim 11,
characterized in that the hinge body (20) further carries, inferiorly, a roller (70) for displacing the
20 cabinet (10) on the floor (P).
14. The hinge arrangement as set forth in claim 12,
characterized in that the roller (70) is journaled in a lower projection (28) of the rear extension (20b) of the hinge body (20).
- 25 15. The hinge arrangement as set forth in any one of the claims 1-14, characterized in that it comprises two hinge bodies (20) secured to the lower front edge (11) of the cabinet (10), one of said hinge bodies (20) carrying, inferiorly, a shoe (40) and being
30 affixed close to the end of the lower front edge (11) turned to the opening side of the front door, and the other hinge body (20) carrying, inferiorly, a shoe (40) and, superiorly, a hinge pin (30) and being affixed to the end of the lower front door (11) turned
35 to the hinge side of the front door.